

PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of PCT/FR01/02530
Joel JACQUET Attorney Docket Q68831
Appln. No.: Not Assigned
Confirmation No.: Not Assigned Group Art Unit: Not Assigned
Filed: April 02, 2002 Examiner: Not Assigned
For: AN EDGE-EMITTING TUNABLE SEMICONDUCTOR LASER

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

IN THE CLAIMS:

Please enter the following amended claims:

3. (Amended)A tunable laser according to claim 1, characterized in that the length L_2 of the tunable section (2) depends on the tuning range of the laser in accordance with the following equation:

$$\Delta\lambda = \lambda^2/2(n_1L_1+n_2L_2)$$

where $\Delta\lambda$ is the tuning range of the laser,

λ is the emission wavelength of the laser, and

n_1 , n_2 are the respective refractive indices of the first and second sections of the laser cavity.

5. (Amended)A tunable laser according to claim 1, characterized in that the fixed reflector (15) and the mobile reflector (20) each have a reflectivity greater than or equal to 90%.

6. (Amended)A tunable laser according to claim 1, characterized in that the fixed

reflector (15) is an etched mirror.

10. (Amended)A tunable laser according to claim 6, characterized in that the fixed reflector (15) is on the front face of the active section (1).

11. (Amended)A tunable laser according to claim 1, characterized in that the rear face of the active section (1) is antireflection treated.

12. (Amended)A tunable laser according to claim 1, characterized in that the mobile reflector (20) is a mirror external to the laser cavity.

16. (Amended)A tunable laser according to claim 12, characterized in that the mobile reflector (20) is controlled by a micro-electro-mechanical (MEM) controller.

17. (Amended)A tunable laser according to claim 1, characterized in that the tunable section (2) is an air area.

18. (Amended)A tunable laser according to claim 1, characterized in that the tunable section (2) is a gas area.

19. (Amended)A method of fabricating a tunable edge-emitting semiconductor laser according to claim 1, characterized in that it includes the following steps:

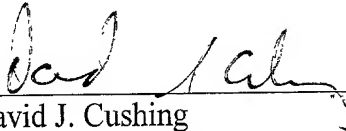
- producing a laser die (10) including a substrate (8) and an active layer (11) consisting of a gain medium, the length L_1 of the gain medium being from 5 μm to 12 μm ,
- producing a fixed etched mirror (15) on the front face of the laser die (10),
- mounting the laser die (10) on a base (50), and
- producing a mobile reflector (20) on the base (50) to the rear of the laser die (10).

Preliminary Amendment
Attorney Docket Q68831

REMARKS

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

3. (Amended)A tunable laser according to ~~either claim 1 or claim 2~~, characterized in that the length L_2 of the tunable section (2) depends on the tuning range of the laser in accordance with the following equation:

$$\Delta\lambda = \lambda^2/2(n_1L_1+n_2L_2)$$

where $\Delta\lambda$ is the tuning range of the laser,

λ is the emission wavelength of the laser, and

n_1, n_2 are the respective refractive indices of the first and second sections of the laser cavity.

5. (Amended)A tunable laser according to ~~any preceding claim~~claim 1, characterized in that the fixed reflector (15) and the mobile reflector (20) each have a reflectivity greater than or equal to 90%.

6. (Amended)A tunable laser according to ~~any preceding claim~~claim 1, characterized in that the fixed reflector (15) is an etched mirror.

10. (Amended)A tunable laser according to ~~any one of claims 6 to 9~~claim 6, characterized in that the fixed reflector (15) is on the front face of the active section (1).

11. (Amended)A tunable laser according to ~~any preceding claim~~claim 1, characterized in that the rear face of the active section (1) is antireflection treated.

12. (Amended)A tunable laser according to ~~any preceding claim~~claim 1, characterized in that the mobile reflector (20) is a mirror external to the laser cavity.

16. (Amended)A tunable laser according to ~~any one of claims 12 to 15~~claim 12,

characterized in that the mobile reflector (20) is controlled by a micro-electro-mechanical (MEM) controller.

17. (Amended)A tunable laser according to ~~any one of claims 1 to 16~~claim 1, characterized in that the tunable section (2) is an air area.

18. (Amended)A tunable laser according to ~~any one of claims 1 to 16~~claim 1, characterized in that the tunable section (2) is a gas area.

19. (Amended)A method of fabricating a tunable edge-emitting semiconductor laser according to ~~claims 1 to 18~~claim 1, characterized in that it includes the following steps:

- producing a laser die (10) including a substrate (8) and an active layer (11) consisting of a gain medium, the length L_1 of the gain medium being from 5 μm to 12 μm ,
- producing a fixed etched mirror (15) on the front face of the laser die (10),
- mounting the laser die (10) on a base (50), and
- producing a mobile reflector (20) on the base (50) to the rear of the laser die (10).